EXHIBIT 23

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Part 1

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Volume IIA
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Antitrust Law

An Analysis of Antitrust Principles and Their Application

Summary of Contents

Detailed table of contents for the entire work appears in the paperbound supplement.

vii

PART THREE   Restraints of Trade: Horizontal and Vertical

Volumes VI (3d ed.), VII (3d ed.), VIII (3d ed.), IX (3d ed.), X (3d ed.), XI (3d ed.), XII (3d ed.), and XIII (3d ed.)

Concepts of agreement, contract, combination, conspiracy under Sherman Act §1, Federal Trade Commission Act §5, and Clayton Act §3 • "Rule of reason" and "Per Se Rule" methodology, content, and similarities • "Vertical" agreements between suppliers and customers restraining intrabrand competition (by limiting dealer prices, customers, or territories or by limiting supplier's use of other dealers) • Tying • Exclusive dealing • "Horizontal" restraints • Horizontal price sellers' joint limitations on price or output • Price fixing by buyers • Agreements fixing element of price or price determination process • Naked and "nearly naked" market divisions • Horizontal agreements concerning rights in intellectual property • Joint ventures • Concerted refusals to deal

PART FOUR   Collateral Antitrust Provisions

Volume XIV (3d ed.)

The Robinson-Patman Act • Discrimination in price • Primary-line and secondary-line injury • Defenses and exemptions • The Robinson-Patman Act's collateral liability provisions • Enforcement of the Robinson-Patman Act • State antitrust law

Index and Table of Cases

Paperbound Supplement

viii

Contents

Contents

x

xi

Contents

xii

Contents

xiii

Contents

xv

Contents

Contents

Contents

xviii

Clearly antitrust violations were among the array of practices that the FTC had in mind when it wrote its 1919 Report and that Congress was considering when it passed the PSA two years later. Just as clearly, however, its concerns were not limited to antitrust violations, as the exclusion of an explicit competitive harm requirement in sections (a) and (b) makes clear. In a case such as this there is little warrant for relying on highly generalized statements about "monopoly," made with reference to the PSA as a whole, to undermine clear statutory language.

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The Economics of Impact, Antitrust Injury, and Antitrust Damages

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¶390.   Introduction

Those business practices and conduct that violate the antitrust laws are thought to cause public harm, which gives rise to public enforcement of the antitrust laws. But these violations also impose

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2005), *cert. denied*, 547 U.S. 1040 (2006) (unilateral conduct; defendant engaged in captive supply transactions with cattle producers; plaintiff must show defendant's conduct adversely affects competition); *London v. Fieldale Farms Corp.*, 410 F.3d 1295, 1303 (11th Cir.), *cert. denied*, 546 U.S. 1034 (2005) (unilateral conduct; defendant had entered into growing contracts with plaintiff who then claimed retaliation and improper weighing; court held that plaintiff must show adverse effect on competition); *IBP, Inc. v. Glickman*, 187 F.3d 974, 977 (8th Cir. 1999) (unilateral conduct; defendant allegedly entered into marketing agreement between processor and feedlots that violated the PSA; court held the agreement did not violate the Act); *Philson v. Goldsboro Milling Co.*, 164 F.3d 625, 1998 WL 709324 (4th Cir. Oct. 5, 1998) (unpublished) (unilateral conduct; plaintiffs complained of defendant's weighing procedures, and defendant then allegedly terminated the contracts with plaintiffs in retaliation; court affirmed lower court's evidentiary findings and jury instructions concerning their PSA claims affirmed); *Jackson v. Swift Eckrich, Inc.*, 53 F.3d 1452, 1458 (8th Cir. 1995) (unilateral conduct; plaintiffs complained that defendant's turkey-handling practices violated the PSA; court upheld jury finding/awarded damages of violations of the PSA by defendant); *Farrow v. USDA*, 760 F.2d 211, 215 (8th Cir. 1985) (concerted action by defendants; officer of Department of Agriculture filed an administrative complaint against two dealers who agreed not to compete against each other; court upheld cease and desist order concerning this conduct); *DeJong Packing Co. v. USDA*, 618 F.2d 1329, 1336–37 (9th Cir.), *cert. denied*, 449 U.S. 1061 (1980) (concerted conduct; Packers and Stockyard Administration alleged that defendants had conspired to force auction stockyards to change their sale terms to place more risk on the seller rather than the packer; court affirmed violation and findings of the Administration); *Pacific Trading Co. v. Wilson & Co.*, 547 F.2d 367, 369–70 (7th Cir. 1976) (unilateral and concerted conduct; plaintiffs complained that defendants sold them bad hams, thus violating their contracts and the PSA; plaintiffs did not state a claim as the business practices did not adversely affect competition).

¶390   The Antitrust System of Remedies

private harm, which gives rise to private complaints. In essence, public enforcement of the antitrust laws is supplemented by private enforcement. The foundation for private enforcement resides in §4 of the Clayton Act, which provides a private right of action for some victims of antitrust violations:

> [A]ny person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor ... without respect to the amount in controversy, and shall recover threefold the damages by him sustained, and the cost of suit, including a reasonable attorney's fee.[1]

At first blush, the provisions appear to be straightforward, but appearances are deceiving. Supreme Court rulings on antitrust standing impose some limits on just who "any person" can be.[2] Other rulings have confined cognizable injuries to "antitrust injury."[3] Various judicial rulings in the lower courts have set out the evidentiary standards for measuring damages. These standards are examined in the succeeding paragraphs of this subchapter.

This Subchapter addresses legal and economic issues that arise in identifying and measuring antitrust damages.[4] In ¶391, we begin with the judicial requirement that the plaintiff prove *antitrust* injury, which is distinct from injury-in-fact. This Paragraph illustrates the economic approach to identifying antitrust injury.

In ¶392, the focus is on the evidentiary standards regarding the proof of antitrust damages. This Paragraph examines the judicial accommodation to the fact that antitrust damages cannot be proved with absolute certainty. It distinguishes reasonable inferences, which are permitted, from speculation, which is not permitted. It also summarizes the main damage methodologies that are typically employed.

Attention is directed to timing issues in ¶393. Since damages are suffered and compensated at different points in time, this raises questions of pre-judgment interest, which is generally not allowed, and post-judgment interest, which is always awarded. Because

¶390. n.1.   15 U.S.C. §15.
2. See Ch. 3F.
3. See ¶¶337, 391.
4. A good supplement is provided by Section of Antitrust Law, ABA, Proving Antitrust Damages: Legal and Economic Issues (William H. Page ed., 2d ed. 2010).

360

antitrust damages may extend into the future, there is a need to consider present value calculations. This Paragraph explains and illustrates the principles of present value calculations as they pertain to antitrust damages.

In ¶394, the most basic econometric methodology — ordinary least squares regression analysis — is presented. The Paragraph also examines the nature of statistical inference — that is, how one may draw reasonable inferences from a collection of data. Some potential weaknesses of regression analysis are also discussed.

A fundamental concern of the antitrust laws is the injury caused by price fixing and monopoly.[5] For the most part, the results are overcharges — that is, prices that exceed those that would have prevailed but for the illegal price fixing or monopolization. In ¶395, damages in overcharge cases are examined. Initially, a distinction is drawn between overcharges and lost profits as a measure of injury in price enhancement cases. Focusing on the overcharge measure of damages, the primary methodologies (the before-and-after and the yardstick approaches) are presented. A variety of practical, as well as conceptual, problems in proving overcharge damages are reviewed.

Following the landmark decisions *Hanover Shoe*[6] and *Illinois Brick*[7], direct purchasers have standing to sue while indirect purchasers (with rare exceptions[8]) are left out in the cold. In response to this seeming inequity, several states have enacted legislation that provides indirect purchasers with standing to sue for overcharges that were passed on by direct purchasers. In ¶396, the problems of proving damages for indirect purchasers are examined.

Those who are foreclosed from participating in a market due to exclusionary practices may also be antitrust victims. Damages in such cases usually take the form of lost profits on lost sales. Measuring such losses is the subject of ¶397.

5. The economist's concern can be traced at least to Adam Smith, The Wealth of Nations 144 (Edwin Cannan ed., 1976), which was originally published in 1776: "People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices."
6. *Hanover Shoe, Inc. v. United Shoe Mach. Corp.*, 392 U.S. 481 (1968)
7. *Illinois Brick v. Illinois*, 431 U.S. 720 (1977).
8. There is an exception for indirect purchasers who have preexisting, fixed-quantity, cost-plus contracts. To say the least, such contracts are rare.

361

When an antitrust violation imposes relatively small injuries on a large number of people, no single consumer will have an incentive to file suit because the transaction costs will outweigh the potential recovery. In such cases, the deterrent effect of private enforcement can be restored through class actions. In ¶398, class actions and the predominance requirement are examined from an economic perspective.

Finally, challenges to the admissibility of expert testimony on damages under *Daubert*[9] are reviewed briefly in ¶399. Samples of expert testimony are included and evaluated.

¶391.   Antitrust Injury and Economic Analysis[1]

The literal language of §4 of the Clayton Act would seem to permit anyone injured by an antitrust violation to file suit for private recovery. In relevant part §4 provides that

> any person who shall be injured in his business or property by reason of anything forbidden in the antitrust laws may sue therefor . . . , and shall recover threefold the damages by him sustained and the cost of suit, including a reasonable attorney's fee. . . . [2]

In spite of this broad language, the Supreme Court has imposed various limits on those who have standing to sue for private damages. One of these limitations involves *antitrust injury,* which is a legal construction that has an economic foundation.[3]

391a.   The *Brunswick* standard.   One might infer from the language of §4 that any actual economic injury factually related to an antitrust violation is compensable in a private suit. In its *Brunswick*[4] decision the Supreme Court, however, made it clear that this is not the case.[5] A brief review of the Court's analysis proves useful in understanding the concept of antitrust injury.

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9.   *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579 (1993).

¶391.   n.1.   This paragraph relies on Roger D. Blair & William H. Page, *The Role of Economics in Defining Antitrust Injury and Standing,* 17 Managerial & Decision Econ. 127 (1996).

2.   15 U.S.C. §15.

3.   For an economic approach to antitrust injury, see William H. Page, *Antitrust Damages and Economic Efficiency: An Approach to Antitrust Injury,* 47 U. Chi. L. Rev. 467 (1980), and Roger D. Blair & Jeffrey Harrison, *Rethinking Antitrust Injury,* 42 Vand. L. Rev. 1539 (1989). For a current survey, see John E. Lopatka, Antitrust Injury in Issues in Competition Law and Policy (W. Dale Collins ed., 2007).

4.   *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.,* 429 U.S. 477 (1977).

5.   For an assessment of *Brunswick*'s importance, see John E. Lopatka & William H. Page, *Antitrust Injury and the Evolution of Antitrust Law,* 16 Antitrust 20 (2002).

362

In the late 1950s, the popularity of bowling soared and with it the fortunes of Brunswick, which was one of the two largest manufacturers of bowling equipment in the United States. As new bowling centers opened, Brunswick's sales of lanes, pinsetters, and ancillary equipment increased rapidly. In the early 1960s, however, the bubble burst, and sales returned to their former level. Brunswick began experiencing considerable difficulty getting paid by the distressed bowling centers. Since Brunswick had made most of its sales on secured credit, it began repossessing the equipment. Given the decline in demand for bowling as a recreational activity, however, Brunswick's efforts to sell the repossessed equipment were largely unsuccessful. Since Brunswick had borrowed some $250 million to finance its credit sales, it encountered severe financial difficulties. In an effort to minimize its losses, Brunswick decided to acquire and operate some of the failing bowling centers. Over a seven-year period, Brunswick acquired 222 bowling centers and operated 168 of them. The remainder were either disposed of or closed. With a market share of 2 percent, Brunswick became the largest operator of bowling centers in an extremely unconcentrated market.

Pueblo Bowl-O-Mat, a competing bowling center, sued Brunswick on the theory that Brunswick's acquisitions violated §7 of the Clayton Act, which prohibits mergers that *may* substantially lessen competition. Because of the prophylactic nature of §7, Pueblo did not have to prove that any anticompetitive results had actually materialized — only that they might have resulted. Pueblo argued that Brunswick was a giant in a land of pygmies and, as a result, had the financial wherewithal to engage in predatory behavior and drive its smaller rivals out of the market. The jury found that the acquisitions violated §7 and awarded damages. When the case reached the Supreme Court, Brunswick had decided not to contest liability and to focus its efforts on the damage issue.

Pueblo had a novel theory of injury and damages: but for Brunswick's unlawful acquisitions, the financially distressed bowling centers would have failed, and Pueblo's sales and profits would have been higher than they actually were. Thus, Pueblo was in a worse financial position than it would have enjoyed but for Brunswick's violation of §7 and therefore was entitled to recover its lost profits. Pueblo thus complained that Brunswick's acquisitions preserved existing competition and thereby deprived Pueblo

of increased profits. The Court held, however, that awarding damages for such an injury would have been inconsistent with the purposes of the antitrust laws. The Court pointed out that if Pueblo "were injured, it was not 'by reason of anything forbidden in the antitrust laws': while [Pueblo's] loss occurred 'by reason of' the unlawful acquisition, it did not occur 'by reason of' that which made the acquisition unlawful."[6]

In other words, it was true that the merger caused Pueblo's injury because the merger enhanced competition by not permitting a Pueblo rival to fail. What made the merger unlawful, however, was the *potential* for predatory behavior on Brunswick's part, but this potential had nothing to do with Pueblo's reduced profits. The Court then went on to explain the private plaintiff's burden in an antitrust suit:

> Plaintiffs must prove *antitrust* injury, which is to say injury of the type the antitrust laws were intended to prevent and that flows from that which makes defendant's acts unlawful. The injury should reflect the anticompetitive effect either of the violation or of anticompetitive acts made possible by the violation. It should, in short, be "the type of loss that the claimed violations . . . would be likely to cause."[7]

Thus, the test for antitrust injury is essentially economic. A private plaintiff must identify the economic rationale for a business practice's illegality under the antitrust laws and show that its harm flows from whatever it is that makes the practice unlawful.

If the plaintiff's injury is directly related to the competitive evil that makes a practice unlawful, then that harm is antitrust injury. If, however, the harm does not flow from a competitive evil, then it may be injury-in-fact, but not be an antitrust injury. In some cases, identifying antitrust injury is a simple task, but it may be somewhat elusive in others.

391b.   Clear cases of antitrust injury.   There are instances in which identifying the anticompetitive aspect of a business practice and the corresponding injuries is easy. A prime example is a horizontal price-fixing agreement.

391b1.   *Collusion among sellers.*   Horizontal price fixing is illegal per se under §1 of the Sherman Act, which generally forbids collusive restraints of trade. The economic rationale for this rule

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6.   *Id.* at 488.
7.   *Id.* at 489.

can be seen in Figure 1. Competition will lead to a price and output of P_1 and Q_1, respectively. If the sellers collude on price and output in an effort to maximize their profits, they will behave as a multiplant monopolist and restrict output to Q_2 and raise price to P_2. This causes a deadweight social welfare loss equal to the triangular area bce.[8] This welfare loss is the usual concern that economists have with noncompetitive pricing. As an economic matter, the conversion of consumer surplus into profit is usually dismissed as a transfer within society.[9] Private plaintiffs, however, are concerned about the conversion of area P_2bdP_1 from consumer surplus to cartel profit. This, of course, is what consumers seek to recover with an antitrust suit.
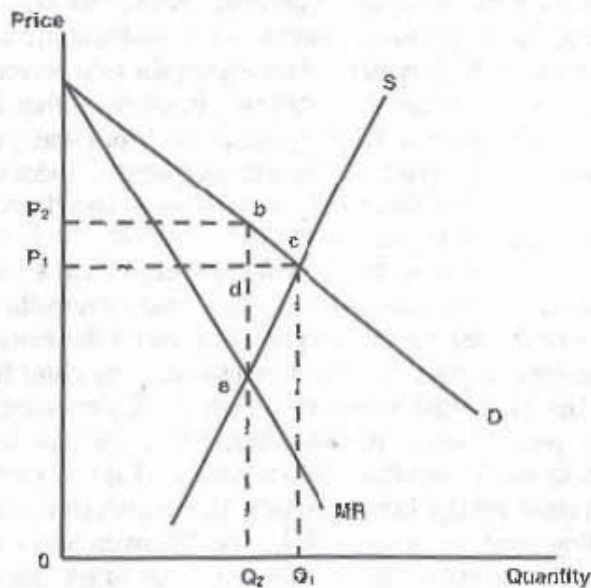
Figure 1

8.   The welfare loss of monopoly is common fare in economics; see, e.g., Jeffrey M. Perloff, Microeconomics 359 (4th ed. 2007).

9.   Richard A. Posner, The Social Cost of Monopoly and Regulation, 83 J. Pol. Econ. 807 (1975), warns that monopoly profit provides an incentive for socially unproductive rent seeking, which involves a waste of society's scarce resources.

¶391   The Antitrust System of Remedies

Direct purchasers from cartels have long had standing to recover any collusive overcharges.[10] Such overcharges constitute antitrust injury. This is consistent with the Supreme Court's *Brunswick* prescription, because an overcharge reflects the anticompetitive effect of the price-fixing conspiracy. Moreover, the overcharge is the type of injury the antitrust laws were intended to prevent. When rivals agree on a price above the competitive level, it is clear that they are agreeing not to compete on that dimension. The elevated price, therefore, is the anticompetitive consequence of the business practice in question.

In Figure 1, we see that output declined from Q_1 to Q_2. A natural question is, what happens to those buyers who were priced out of the market? It would seem that those consumers who would have purchased those Q_1–Q_2 units also suffered antitrust injury. This is correct as an economic matter but is problematic as a practical matter. The difficulty lies in identifying those who are injured by the deadweight welfare loss. Anyone could claim that he or she would have purchased at the competitive price but was priced out of the market as a result of the anticompetitive pricing. Thus, courts are likely to find that the claims of those who refused to purchase at the cartel price are *speculative*.[11]

Suppose that a cartel must compete with a rival that is not a member of the cartel. The cartel creates a price umbrella over the rival firm, who takes the cartel's price as given if the firms behave like competitive firms.[12] In this circumstance, the rival firm benefits from the cartel and suffers no injury at all. Consumers, however, must pay when purchasing from both the cartel and the noncolluding rival. Certainly, the overcharge paid to cartel members is antitrust injury. Less obviously, the overcharge paid to the noncolluding rival is also antitrust injury. The overcharge is clearly caused by the cartel's output restriction. As Judge Easterbrook explained, "A cartel cuts output, which elevates price throughout the market; customers of fringe firms (sellers who have not joined the cartel) pay this higher price and thus suffer antitrust injury, just like customers of the cartel's members."[13] Nonetheless, some

10. *Chattanooga Foundry & Pipe Works v. Atlanta*, 203 U.S. 390, 396 (1906).
11. There are a host of others who have suffered antitrust injury: indirect purchasers, laid-off employees, input suppliers, producers of complements, and many others in the economy. These victims are denied standing for a variety of practical reasons.
12. For a more complete economic analysis, see Roger D. Blair & Christine A. Piette, *Umbrella Pricing*, *in* Issues in Competition Law and Policy (Wayne D. Collins ed., 2007). See also ¶395d. On umbrella pricing claims generally, see ¶347.
13. *United States Gypsum Co. v. Indiana Gas Co.*, 350 F.3d 623, 627 (7th Cir. 2003).

366

courts have denied standing to purchasers from nonconspiring rivals on the grounds that their damages are inherently speculative — one cannot attribute the noncolluding rival's price increase to the cartel's illegal price increase.[14] But the causal relationship in such cases is quite clear from an economic perspective because an economically rational noncolluding rival will sell at the cartel price. If purchasers can prove the overcharge paid to the cartel with reasonable certainty, the overcharge paid to the noncolluding rival should also be sufficiently certain and, therefore, not speculative.[15] Although the overcharge is in some sense an indirect consequence of the cartel, it is a sufficiently determinate consequence of the cartel's own overcharge to justify standing.

Thus, whether a price-fixing conspiracy among sellers involves everyone or only a dominant group, this business practice leads to overcharges that constitute antitrust injury. The same can be said for business practices that are economically equivalent — for example, agreements on market division, product quality, credit terms, and the like.

391b2. Collusion among buyers. When buyers collude to depress the price that they must pay, they behave as monopsonists, and therefore we call this collusive monopsony.[16] If there had been any doubt about the antitrust treatment of collusion among buyers, it was dispelled in *Mandeville Island Farms*.[17] In that case, sugar refiners in northern California agreed among themselves to adopt a pricing formula that resulted in uniform prices for sugar beets. The purpose and effect of the scheme was to reduce the average price paid to sugar beet farmers below the competitive level. The Court held that the agreement was per se illegal, "even though the price-fixing was by purchasers and the persons specially injured under the treble damage claim are sellers, not customers or consumers."[18] This makes sense: suppliers who receive prices below the competitive level are selling in a

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14. *See, e.g., Mid-West Paper Prods. Co. v. Continental Grp., Inc.,* 596 F.2d 573, 583 (1979): "[I]t cannot readily be said with any degree of economic certitude to what extent, if indeed at all, purchasers from a competitor of the price-fixers have been injured by the illegal overcharge."

15. These results can be seen more clearly in ¶395d, which provides a more extended economic analysis.

16. For an extensive treatment of monopsony, see Roger D. Blair & Jeffrey L. Harrison, Monopsony in Law and Economics (2010).

17. *Mandeville Island Farms v. American Crystal Sugar Co.,* 334 U.S 219 (1948).

18. *Id.* at 235 (notes deleted).

cartelized market and therefore are comparable to the direct purchasers from a seller's cartel.[19]

In Figure 2, the competitive price and output are P_1 and Q_1, respectively. Collusion among the buyers leads them to restrict their purchases to Q_2 where marginal factor cost (MFC) equals demand. This will have the effect of depressing the price below the competitive level of P_1 to the monopsony level of P_2. The anticompetitive consequences of collusive monopsony are clear. Formerly competitive buyers agree to restrict their purchases in an effort to depress the price that they will pay below the competitive level. Each buyer has an individual profit motive to expand its purchases beyond its proportional share, but each refrains from doing so. As a result of their agreement not to compete as buyers, the price is depressed below the competitive level. Those who sell to the colluding buyers suffer antitrust injury equal to $P_1 - P_2$ per
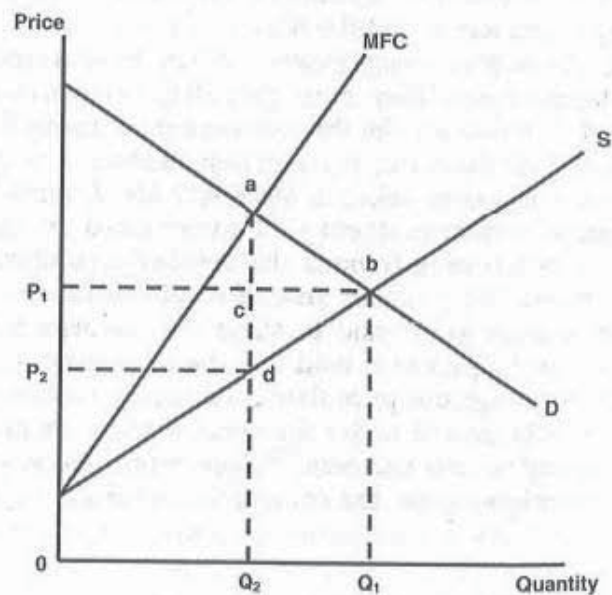
Figure 2

19.   In *Bellevue Drug Co. v. Advance PCS*, 2004 WL 724490, at *4 (E.D. Pa. Mar. 2, 2004), the court found that sellers suffered antitrust injury when purchasers agreed not to bid up prices. The court found that an agreement to lower prices paid to suppliers was anticompetitive.

unit.[20] Analogous to the monopoly overcharge, the victims of collusive monopsony suffer antitrust injury equal to the area P_1cdP_2. This follows because the anticompetitive consequence of this agreement is the reduction of price below the competitive level, which creates a deadweight welfare loss that mirrors the welfare loss from a sellers' cartel.[21]

Collusion on price — whether by sellers or by buyers — imposes a readily identifiable efficiency loss and corresponding antitrust injury. These are the easy cases, because what makes the practice illegal is the cause of just about any conceivable injury.

391c. **Antitrust violations without antitrust injury.** There are times, like in *Brunswick*, when the antitrust precedents indicate that a violation has occurred but no antitrust injury can be found. In *Cargill, Inc. v. Monfort, Inc.*,[22] for example, the Supreme Court held that when a merger increases productive efficiency, the resulting harm to competitors is not antitrust injury. This follows because improvements in efficiency are socially desirable — scarce resources are saved, and prices to consumers are apt to be lower. Less efficient rivals lose sales and profits. As a result, these competitors have an incentive to improve their efficiency as well, which is a good thing. Thus, increasing the efficiency of a competitor, like preserving competition, does not cause an "injury of the type the antitrust laws were intended to prevent."[23]

391d. **Antitrust violations with problematic antitrust injury.** When a producer forbids the resale of its product below a specified *minimum* price, it engages in resale price maintenance (RPM). Following the *Dr. Miles*[24] decision in 1911, RPM had been a per se violation of the antitrust laws. In 2007, the Supreme Court

20. Of course, the social welfare loss is triangle *abd*. Again, this is the usual concern of economists, but sellers who are priced out of the market would have a difficult time shedding a speculative label on their damage claims.

21. *Mandeville Island Farms*, 334 U.S. at 235.

22. 479 U.S. 104 (1986).

23. Until the Supreme Court's decision in *State Oil Co. v. Khan*, 522 U.S. 3 (1997), maximum resale price fixing was illegal per se. It was impossible, however, to find any antitrust injury because maximum resale prices are (almost) always imposed to restrain local monopoly. The effect was to reduce price and expand output. The victim's complaint would necessarily be that it lost profits because it was not permitted to raise price above the competitive level. This is surely not antitrust injury. For an analysis of the *Khan* decision, see Roger D. Blair & John L. Lopatka, Albrecht *Overruled — At Last*, 66 Antitrust L.J. 537 (1998).

24. *Dr. Miles Med. Co. v. John D. Park & Sons*, 220 U.S. 373 (1911).

overturned *Dr. Miles* in its *Leegin*[25] decision. Now, RPM is subject to the rule of reason and, therefore, the economic consequences have to be analyzed. Three explanations for this business practice have been offered by Telser.[26] First, the distributors may want to collude horizontally but recognize that the incentive to cheat will be irresistible. Accordingly, they try to get the manufacturer to impose and police their horizontal agreement through an RPM program. Second, the manufacturers may want to collude but also recognize the urge to cheat. They agree to implement an RPM scheme to reduce the incentive to cheat by removing the ability to cut price. Finally, a manufacturer may impose RPM to induce its distributors to provide product-specific services without fear of free riding by discounters. If RPM is motivated by a distributor cartel or by a manufacturer cartel, the analysis of antitrust injury is precisely the same as described in ¶391a. If, however, RPM is motivated by the suppliers' belief that product-specific services are necessary and that free riding may undermine their provision, the identification and measurement of antitrust injury becomes problematic.[27] Most private RPM suits are brought by distributors. Some of them have been terminated because they refused to adhere to the mandated minimum price, and some of them have been coerced into acquiescing due to fear of termination. In these situations, the manufacturer may have violated §1 but the distributors have not suffered antitrust injury. Although the distributors wanted to charge a lower price to consumers, that sort of free riding can cause the elimination of valuable services to the consumers' detriment.

In *Isaksen* the plaintiff was a coerced dealer who unwillingly acquiesced to the supplier's minimum price demands.[28] From time to time, Isaksen would sell at reduced prices and earn substantially more profit while doing so. The damages model compared the profits while adhering to the minimum price with those when he was discounting. Judge Posner correctly pointed out that the higher profits during periods of nonadherence could be attributed

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25. *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877 (2007).
26. Lester Telser, *Why Should Manufacturers Want Fair Trade?*, 3 J.L. & Econ. 89 (1960).
27. This is spelled out in some detail in Roger D. Blair, Jill B. Herndon, & John E. Lopatka, *Resale Price Maintenance and the Private Antitrust Plaintiff*, 83 Wash. U. L.Q. 657 (2005).
28. *Isaksen v. Vermont Castings, Inc.*, 825 F.2d 1158 (7th Cir. 1987), *cert. denied*, 486 U.S. 1005 (1988).

at least in part to the fact that other dealers were adhering to the minimum price and therefore charging more than Isaksen. This, of course, meant that Isaksen was free riding on the efforts of the other dealers and enjoyed a price advantage because the other dealers maintained their prices. The portion of the lost profit that was attributable to the higher prices of the other dealers was not antitrust injury.[29] This raises an obvious question of whether a private plaintiff can separate out the damages — if any — that do not flow from undercutting the acquiescing dealers.

Although Judge Posner conceded that a complaining distributor may have suffered antitrust injury, demonstrating anticompetitive consequences is problematic.[30] As it turns out, a simple price test will not work. Since the whole point of RPM is to raise price, one will, of course, observe higher prices. The supplier hopes that price will rise to reflect the added value that the product-specific services generate, which should result in an increase in quantity demanded at the higher price. Unfortunately, the output test that this suggests is not dispositive.

The difficulty with an output test can be seen with the aid of Figure 3. Without the provision of product-specific services, the demand and supply are D_1 and S_1, respectively. The resulting equilibrium yields a price of P_1 and a quantity of Q_1. Consumer surplus equals the area bfP_1 and producer surplus is equal to the area P_1fd. When the manufacturer imposes RPM on its distributors, two things happen: the distributors' profit margins increase and their ability to compete on price is limited. From the manufacturer's perspective, this yields the desired result: the distributors must compete by providing more services and this, in turn, causes the demand curve to shift. Exactly what happens to social welfare depends on the nature of the shift in demand.

29.   825 F.2d at 1164–65.
30.   For an economic analysis, see Roger D. Blair & James M. Fesmire, *The Resale Price Maintenance Policy Dilemma*, 60 S. Econ. J. 1043 (1994).
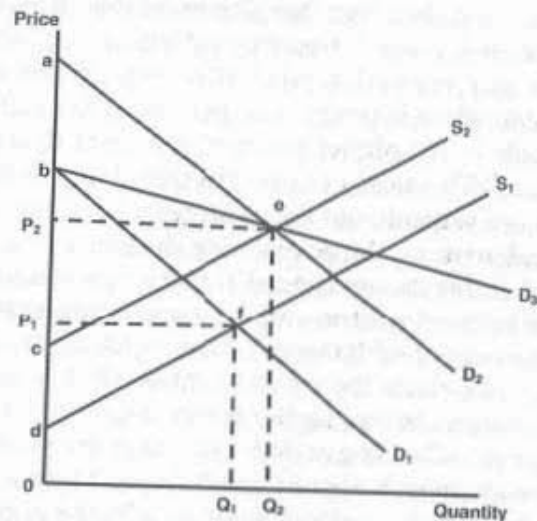
Figure 3

First, suppose that there is a parallel shift in demand from D_1 to D_2. Since the enhanced level of product-specific services are costly, supply will shift from S_1 to S_2. At the new equilibrium, price has risen from P_1 to P_2, and quantity has also risen from Q_1 to Q_2. Social welfare has also increased because consumer surplus increased from bfP_1 to aeP_2 while producer surplus increases from P_1fil to P_2ec. There are no losers in this scenario. In this instance, RPM is not anticompetitive and therefore there can be no antitrust injury.[31]

A number of critics have correctly pointed out that the results described above depend on the assumed parallel shift in demand.[32] But such a shift implies that all consumers value the product-specific services equally. But some infra-marginal customers may place little or no value on the RPM-induced increase in product-specific services. If this is the case, RPM may result in expanded sales, but lead to a decrease in social welfare. For

31. In fact, in this case, RPM is socially beneficial, and the per se rule of illegality appears to be both misguided and socially harmful.
32. See, e.g., Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and Its Practice §11.3c (5th ed. 2015); William Comanor, Vertical Price Fixing, Vertical Market Restriction, and the New Antitrust Policy, 98 Harv. L. Rev. 983 (1985); F.M. Scherer, The Economics of Vertical Restraints, 52 Antitrust L.J. 687, 687–707, 731–40 (1983). See also Roger D. Blair & James M. Fesmire, The Resale Price Maintenance Policy Dilemma, 60 S. Econ. J. 1082 (1994) (analytical demonstrations of ambiguous welfare effects).

372

example, suppose that the RPM-induced increase in product-specific services causes D_1 to rotate to D_3. For purposes of comparison, this is drawn so the post-RPM equilibrium — P_2 and Q_2 — is the same as in the case with a parallel shift in demand. The increase in producer surplus is the same: $P_1 fd$ rises to $P_2 ec$. Consumer surplus, however, declines from bfP_1 to beP_2. If the loss in consumer surplus exceeds the gain in producer surplus, social welfare will decline. In this instance, RPM may be deemed anticompetitive, and one could then begin a search for antitrust injury.

As a practical matter, the empirical economic evidence is apt to show only that RPM led to both a price increase and a quantity increase. These results alone do not inform us about the consequences for social welfare. Unfortunately, an RPM-induced increase in price and output is consistent with either an increase or a decrease in social welfare. In principle, we can measure our welfare triangles and resolve the matter. In practice, however, this will usually not be possible due to data limitations. Consequently, proving the existence of antitrust injury is problematic.

391e.   Antitrust injury in foreclosure cases.[33]   If an incumbent monopolist takes steps to maintain its monopoly by foreclosing a would-be rival from entering, the would-be entrant is injured because it does not earn the profit that it would have earned if it had entered. Consumers are also injured because they do not get the benefit of the competition that would have accompanied entry. Both consumers and foreclosed rivals suffer antitrust injury. As will be shown below, these injuries do not overlap.

391e1.   *The economics of foreclosure.*   An incumbent monopolist's efforts to foreclose its would-be rivals have an obvious adverse impact upon the entrant's business. But foreclosure also has just as obvious an adverse impact on the monopolist's customers as it perpetuates monopoly pricing. These impacts are not duplicative and, therefore, damage awards will not require complex apportioning. In addition, permitting consumers to sue for damages will enhance the deterrent effect of private enforcement without undermining our sense of fairness. The economic impact of foreclosure can be seen most clearly with a simple example that is summarized graphically in Figure 4, where D, MR, and MC_1 represent the incumbent monopolist's demand, marginal revenue, and marginal cost, respectively. The profit-maximizing price and

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33.   This Subparagraph depends largely on Roger D. Blair & Christine A. Piette, *Antitrust Injury and Standing in Foreclosure Cases*, 31 J. Corp. L. 401 (2006).

output are shown as P_1 and Q_{11}, respectively, and profit is equal to area P_1abc.

Now, suppose that some would-be rivals threaten to enter. If entry is successful, their collective supply function will be S_E in Figure 4. Following entry, the incumbent's economic problem is to maximize its profits given the competitive presence of the entrants.[34] On the assumption that the entrants will expand their
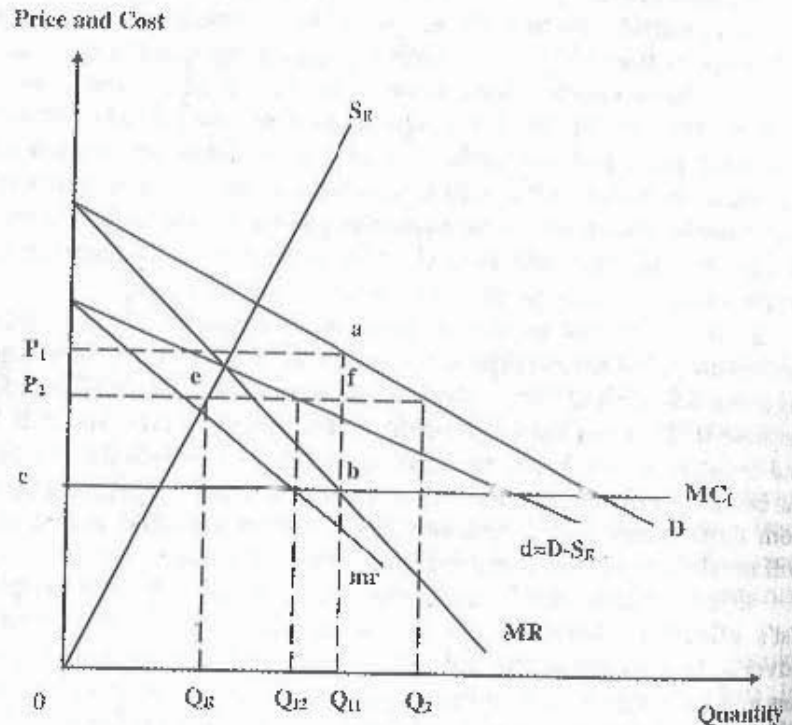
Figure 4

34.   We are employing the dominant-firm price leadership model, which can be traced to Karl Forchheimer, Theoretisches zum unvollständigen Monopole, Schmoller Jahrbuch (1908). This model can be found in most intermediate microeconomics textbooks. See, e.g., Robert Pindyck & Daniel L. Rubinfeld, Microeconomics 461–62 (6th ed. 2005). It is also standard fare in industrial organization. See, e.g., Frederic M. Scherer & David Ross, Industrial Market Structure and Economic Performance 224–25, 233 (3d ed. 1990). The collusive variant of the dominant firm model was used to assess market power by Thomas R. Saving, Concentration Ratios and the Degree of Monopoly Power, 11 Int'l Econ. Rev. 139 (1970), and subsequently by William M. Landes & Richard A. Posner, Market Power in Antitrust Cases, 94 Harv. L. Rev. 937 (1981).

374

output until supply equals the prevailing price set by the incumbent,[35] the incumbent can take that supply response into account and determine the residual demand for its own output. The residual demand is found by subtracting the entrants' supply from the market demand. In other words, we want to find residual demand such that $d = D - S_E$. In order to maximize its profit, the incumbent will produce the quantity at which its marginal cost equals the marginal revenue (*mr*) associated with the residual demand.

These results are depicted in Figure 4, where we show the residual demand as $d = D - S_t$ and the corresponding marginal revenue as *mr*. Now, the incumbent maximizes its profit subject to the presence of the entrants by producing Q_{I2}, where *mr* equals MC_j. The profit-maximizing price is P_2. The entrants will respond to this price competitively by producing Q_E and, of course, selling at a price of P_2. As we can see in Figure 4, a total output of $Q_2 = Q_{I2} + Q_E$, which clears the market at a price of P_2.[36]

In the context of this example, one can examine the economic effects of foreclosure. If the incumbent monopolist is successful in foreclosing the entrants, it will maintain the monopoly solution. The monopolist's profits are equal to $(P_1 - MC_I)Q_{I1}$. If foreclosure is not successful, entry will lead to a price reduction from P_1 to P_2 and a reduction in the former monopolist's output from Q_{I1} to Q_{I2}. This, of course, reduces the incumbent's profit from $(P_1 - MC_I)Q_{I1}$ to $(P_2 - MC_I)Q_{I2}$. Avoiding this reduction in profit provides a powerful economic incentive for the incumbent monopolist to foreclose entry. As long as the cost of foreclosing the entrants is smaller than the difference in profits, the foreclosure strategy will be profitable. In this event, we should anticipate efforts in that direction.

As a result of the foreclosure, the would-be entrants have lost profits (producer surplus) equal to triangle $0P_2e$ in Figure 4. Presumably, those lost profits represent antitrust injury to the entrants. Moreover, this loss is a *direct* result of the foreclosure. It is hard to argue that they would not have antitrust standing and this, in fact, is what Justice Stevens found in his concurring opinion in

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35. The entrants could behave differently, but this assumed behavior is the most competitive conduct that the incumbent should expect. If the entrants behave differently, the price and output will be different and injuries will have to be recalculated.

36. We assume that the entrants do not collude with the incumbent and that there is no collusion among the entrants.

¶391   The Antitrust System of Remedies

Trinko.[37] But the entrants are not alone, as consumers have also been directly injured due to the foreclosure. An incumbent monopolist forecloses its would-be rivals so it can protect its own profits. As a result of the foreclosure, price is P_1 rather than P_2 in the example. The usual measure of consumer injury is the overcharge — that is, the difference between the actual price and the "but for" price (P_1-P_2) times the quantity sold at the higher price (Q_{r1}). This is the rectangular area P_1afP_2. As is plain to see, this area does not overlap with the area representing the lost profits of the would-be entrants. Consequently, there is no duplication in the injury suffered or the damages claimed. Nor is there any need for complex apportionment of any damage award because the claims are distinct.

391e2.   *Inferring antitrust injury.*   In a rule of reason case, antitrust injury may not be presumed. For example, in *Craftsmen Limousine, Inc. v. Ford Motor Co.*, the plaintiff alleged that Ford and others conspired to prevent them from advertising their specialty limousines in the limousine industry trade press. In addition, the plaintiffs were allegedly foreclosed from participating in limousine trade shows. According to Craftsmen, the reduced ability to promote its specialty limousines caused it to lose profits. The Eighth Circuit held that the §1 case was to be decided under a rule of reason analysis.[38] In such cases, injury to competition cannot be presumed, and therefore a private plaintiff must prove antitrust injury.

The plaintiffs' expert began his analysis with the economic inference that a limitation on Craftsmen's ability to advertise was anticompetitive. The court required proof of that proposition, which the expert did not provide. Arguably, the expert demonstrated with statistical evidence that the restriction caused injury to the plaintiff (a competitor), but not necessarily injury to competition.

37.   In his concurring opinion (joined by Thomas and Souter) in *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko*, 540 U.S. 398 (2004), Justice Stevens found injury to foreclosed rivals but not to consumers. (To the extent it is relevant, H.H. was consulted by the defendant.)

38.   *Craftsmen Limousine, Inc. v. Ford Motor Co.*, 363 F.3d 761 (8th Cir. 2004).

¶392. Evidentiary Standards[1]

Section 4 of the Clayton Act provides a private right of action for damages to anyone who has been injured by an antitrust violation.[2] In abbreviated form, a successful private plaintiff must prove three things: (1) that the defendant violated the antitrust laws; (2) that the plaintiff was injured by the antitrust violation;[3] and (3) the monetary value of the injury suffered. With respect to the fact of injury, the plaintiff must meet the usual common law standard of "reasonable certainty." That is, in proving the fact of injury, the plaintiff must prove with reasonable certainty that the defendant's antitrust violation caused the harm suffered by the plaintiff.[4] For example, in a case involving an unlawful conspiracy, the Supreme Court ruled that "proving the *fact* of damage under §4 of the Clayton Act is satisfied by . . . proof of some damage flowing from the unlawful conspiracy."[5] When it comes to the *amount* of the damage, however, the burden of proof is somewhat relaxed.

392a. "Just and reasonable" estimates. Private damage claims can be classified generally into overcharge cases and foreclosure cases. In an overcharge case, the defendant has illegally imposed noncompetitive prices through some sort of collusive scheme or through monopolizing activities. In either event, the usual measure of damage is the difference between the illegal price that was actually charged and the price that would have been charged "but for" the violation multiplied by the number of units purchased. Ordinary business records will typically provide the necessary data on the actual price paid and the actual quantity purchased. Problems arise in determining the "but for" price. Similarly, in a foreclosure case, the plaintiff is prevented from participating in a market, and therefore the measure of damages is the

¶392, n.1. This paragraph depends in part on Roger D. Blair & William H. Page, "*Speculative*" *Antitrust Damages*, 70 Wash. L. Rev. 423 (1995).

2. 15 U.S.C. §15a. Ordinarily, antitrust standing rules limit the "anyone" to those who have been injured directly. *See Illinois Brick Co. v. Illinois*, 431 U.S. 720 (1977).

3. The antitrust injury doctrine requires that the injury flow from the anticompetitive consequences of the antitrust violation. *Brunswick Corp. v. Pueblo Bowl-O-Mat*, 429 U.S. 477 (1977). For an expanded discussion of antitrust injury and standing, see William H. Page, *The Scope of Liability for Antitrust Violations*, 37 Stan. L. Rev. 1445 (1985), and Roger D. Blair & Jeffrey L. Harrison, *Rethinking Antitrust Injury*, 42 Vand. L. Rev. 1539 (1988).

4. In *Story Parchment Co. v. Paterson Parchment Paper Co.*, 282 U.S. 555, 562 (1931), the Court refers to "[t]he rule which precludes the recovery of uncertain damages. . . ."

5. *Zenith Radio Corp. v. Hazeltine Research*, 395 U.S. 100, 114 n.9, 123–24 (1969) (emphasis added).

difference between the profits that the plaintiff actually earned and those that would have been earned but for the violation. Again, ordinary business records provide data on what actually transpired, but the profit that would have been earned but for the violation must be estimated. Because antitrust damage calculations necessarily require a determination of what would have been in a "but for" world, there is an inescapable element of uncertainty in those calculations. The courts have long recognized that antitrust damages cannot be measured with absolute precision. In *Story Parchment*, for example, the Supreme Court pointed out nearly 85 years ago that "the rule which precludes the recovery of uncertain damages applies to such as are not the certain result of the wrong, not to those damages which are definitely attributable to the wrong and only uncertain in respect of their amount."[6] The Court went on to explain that "it will be enough if the evidence show the extent of the damages as a matter of just and reasonable inference."[7] But there is a difference between inference, which is permitted, and *speculation*, which is not permitted. What is required is that the plaintiff "make a just and reasonable estimate of the damage based on relevant data."[8]

This, of course, seems fair: since the defendant created the need for damage estimation in the first place by violating the antitrust laws, it should bear the burden of uncertainty in proving the consequent damages. This does not mean, however, that the damage estimate can be a stab in the dark. Damage evidence will be deemed insufficient as a matter of law if it permits no more than "pure speculation and guesswork."[9] Thus, in the world of antitrust damages, "speculative" is an epithet that is used to characterize insufficient damage proof and dooms the damage calculation. Juries cannot be asked to speculate. As a general proposition, it is difficult to identify a bright line that separates a "just and reasonable inference" from "speculation." A better understanding of this concept should develop as the issue is addressed in more concrete terms in subsequent paragraphs.

392b. **Measure of damages.** There are various ways of measuring the damages: lost profits, overcharges, reduction in going-concern value, among others. The guiding principle is that the antitrust victim should recover the difference between its

6.   *Story Parchment*, 282 U.S. at 562.
7.   *Id.* at 563.
8.   *Bigelow v. RKO Radio Pictures*, 327 U.S. 251, 264 (1946).
9.   *Home Placement Serv. v. Providence Journal Co.*, 819 F.2d 1199, 1205 (1st Cir. 1987).

378

actual economic condition and its "but for" condition.[10] Using profit as a measure, the actual condition is the profit earned given that the antitrust violation occurred. In contrast, the "but for" condition is the profit that would have been earned had the violation not occurred, but all other economic conditions remained the same. The Eighth Circuit put it succinctly: "... an antitrust plaintiff's damages should reflect the difference between its performance in a hypothetical market free of all antitrust violations and its actual performance in the market infected by the anticompetitive conduct."[11] In other words, the antitrust damage calculation must isolate the effect of the antitrust violation. It should not include any other effects — good or bad — that influence the financial condition of the plaintiff. As we shall see below, this may make damage estimation extremely difficult.

392c. **Net harm.** It must be emphasized that the antitrust plaintiff is entitled to recover only its *net* harm. As the Ninth Circuit put it, "[a]n antitrust plaintiff may recover only to the 'net' extent of its injury; if benefits accrued to it because of an antitrust violation, those benefits must be deducted from the gross damages caused by the illegal conduct."[12] The sense of this is fairly obvious as it reduces the chances of overcompensation.

The implications of confining recoveries to net harm are fairly obvious in some — but not all — instances. For example, to the extent that a plaintiff has been foreclosed from some particular market, it would have lost sales and therefore would experience lower revenues than it would have had absent the foreclosure. If the plaintiff made sales elsewhere and thereby replaced — either fully or partially — those lost sales, then the *net* loss in sales must be determined. Furthermore, to the extent that the firm has made fewer sales, it has avoided the costs of making those sales. Those costs that are avoided must be deducted from the lost revenues in order to calculate the actual harm to the plaintiff's business. In some sense, the plaintiff's gross injury is captured by the lost sales, but it has benefitted by avoiding the costs that it would have had to incur in order to make those sales. As a result, the actual harm is the net harm — that is, the lost net profits. If the avoided costs

10. In *Bigelow*, 327 U.S. at 264, the Court explained that antitrust damages are measured "by comparison of profits, prices and values as affected by the conspiracy, with what they would have been in its absence under freely competitive conditions."

11. *National Farmer's Org. v. Associated Milk Producers*, 850 F.2d 1286, 1306 (8th Cir. 1988) *cert. denied*, 489 U.S. 1081 (1989).

12. *Los Angeles Mem'l Coliseum Comm'n v. National Football League*, 791 F.2d 1356, 1367 (9th Cir. 1986), *cert. denied*, 484 U.S. 826 (1987).

were not deducted from the lost sales revenue, the plaintiff's recovery would exceed its actual injury. In that event, the plaintiff would be overcompensated.

The requirement of calculating net harm can be somewhat more difficult in other situations. As an example, consider the case of tying arrangements.[13] In a tying arrangement, a seller agrees to sell product A only on the condition that the buyer also purchase product B. Presumably, the seller has some market power in the product A market and, as a result, can use product A as a tying good. At the same time, the seller faces competition in the product B market and has no market power in that market. Ordinarily, the buyer's complaint is that it suffered injury because it was overcharged on the tied product. To see the problem associated with the requirement of calculating net harm, start with the situation where the monopolist over product A sets a profit-maximizing price on product A and allows its customers to purchase product B at competitive prices. If the seller begins to impose a tying requirement that involves an overcharge on the tied good, then it will have to reduce the price of the tying good below the profit-maximizing level.[14] In that case, the net harm to the buyer is equal to the overcharge less the price reduction on the tying good. Calculating this net harm can be a daunting task. Consider the case of *Siegel v. Chicken Delight*,[15] in which the franchisor tied supplies and cooking equipment to its franchise license. Chicken Delight did not charge its franchisees an explicit license fee. Instead, it charged an indirect fee through its pricing of the supplies and equipment. In order to calculate the net harm to the franchisees, it was necessary to deduct the value of the franchise license from the overcharge (if any) on the supplies and equipment. The value of a franchise license is equal to the discounted present value of the profits that the franchise location generates when the supplies and equipment are sold at market prices. Estimating the value of the franchise license is no easy task, but it must be done if overcompensation is to be avoided.[16]

13. Tying arrangements are examined in great detail in Chapter 17. On damages in tying cases, see ¶394e.

14. Aaron Director & Edward H. Levi, *Law and the Future: Trade Regulation*, 51 Nw. U. L. Rev. 281 (1956); Roger D. Blair & David L. Kaserman, *Vertical Integration, Tying, and Antitrust Policy*, 68 Am. Econ. Rev. 397 (1978).

15. *Siegel v. Chicken Delight*, 448 F.2d 43 (9th Cir. 1971), cert. denied, 405 U.S. 955 (1972).

16. In tying cases, there may not be any net harm even if there is an overcharge on the tied good(s). In *Chicken Delight*, for example, the overcharge on the supplies and equipment

392d.   Basic damage methodologies.   There are two funda-
mental approaches to measuring damages: (1) the before-and-after
approach and (2) the "yardstick" approach.[17] In using the before-
and-after methodology, the period *during* which the antitrust vio-
lation allegedly had an adverse effect on economic performance is
called the damage period. The actual performance *before* and *after*
the damage period is then used to draw an inference regarding the
performance during the damage period "but for" the antitrust vio-
lation. In a "yardstick" model of damages, the plaintiff's perfor-
mance is compared to that of another business that is substantially
similar. This second firm is the benchmark or yardstick for pur-
poses of comparison. In effect, one uses the performance of the
yardstick after the antitrust violation has occurred to draw infer-
ences regarding the "but for" performance of the plaintiff.

In *Bigelow*,[18] the Supreme Court reviewed the plaintiffs' evi-
dence of damage estimates, which used both the before-and-after
approach and the yardstick approach. The plaintiffs were indepen-
dent movie exhibitors who claimed that rival exhibitors received
films before the plaintiffs did as a result of an illegal conspiracy
with the defendants. Because of the repeated delays in distribu-
tion, the plaintiffs allegedly were at a competitive disadvantage
and therefore lost profits. The plaintiffs introduced two damage
estimates at trial. The first estimate used a comparison of the plain-
tiffs' operations with those of another competitor during the con-
spiracy period. The competitor, which obtained movie releases in
advance of the plaintiffs, was comparable in size to the plaintiffs.
The competitor's equipment and location made it somewhat less
attractive to movie theater patrons. Despite the differences, the
yardstick estimate showed that the plaintiffs lost business presum-
ably as a result of the alleged anticompetitive conduct. The second
estimate compared the performance of the plaintiffs' business
before and after the violation. This before-and-after approach also
demonstrated that the plaintiffs' business had declined during the
conspiracy period.

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could not exceed the value of the franchise license. If it did, the franchisees would have
rejected the opportunity to become franchisees.

17.   For a compact survey, see Richard C. Hoyt et al., *Comprehensive Models for Assess-
ing Lost Profits to Antitrust Plaintiffs*, 60 Minn. L. Rev. 1233 (1976). *See also* Herbert Hoven-
kamp, *Federal Antitrust Policy: The Law of Competition and Its Practice* §16.3 (5th ed.
2015). These methodologies can be applied to overcharges or lost profits or any other mea-
sure of damages.

18.   *Bigelow v. RKO Radio Picture*, 327 U.S. 251 (1946).

On the issue of damages, the Court addressed the defendants' argument that both measures were invalid, rejected it, and upheld the lower court's damage award. The Court carefully affirmed on the basis of the before-and-after evidence alone, leaving open the question of whether the yardstick evidence would have provided sufficient support for the verdict. Since the Court did not reject the yardstick estimates, one may infer from *Bigelow* that the yardstick approach is a also viable technique.

392e. **Before-and-after models and evidentiary problems.** The antitrust plaintiff must measure its antitrust damages by comparing its actual economic condition to what its condition would have been "but for" the unlawful behavior of the defendant(s). In the before-and-after model of damages, the plaintiff uses its experience prior to and after the antitrust violation to infer what its experience would have been but for the antitrust violation. In an overcharge case, for example, the plaintiff uses the prices that it paid (or received) prior to and after the monopolization or price-fixing activity as a basis for inferring what the prices would have been during the damage period but for the unlawful overcharges.[19] In a foreclosure (or exclusion) case, the plaintiff uses its own experience prior to the violation to infer what its profits would have been but for the anticompetitive foreclosure.[20] Evidentiary problems flow from the nature of the before-and-after approach to inferring the "but for" world.[21]

First, the plaintiff must establish that its experience before the antitrust violation is a reliable predictor of its future experience. In a foreclosure case, the plaintiff uses its own economic performance before the foreclosure to infer the profits that it would have earned but for the foreclosure. But how reliable is the plaintiff's prior experience as a foundation for such inferences? The answer depends in part on the length and stability of the firm's past performance. In cases where the plaintiff's past performance was dismal, it is not intuitively plausible that the firm would have suddenly become quite successful (i.e., profitable) absent the antitrust violation. For example, suppose the plaintiff had been largely unsuccessful but had a brief period of profitability prior to the antitrust violation. The plaintiff will have to provide a convincing

argument that the burst of profitability was more than an aberration. For example, in *Hawaiian Oke*,[22] the court rejected the plaintiff's projection of profits based on an abnormally profitable six-month period. Similarly, in *Pennsy Supply*,[23] the damage estimates were rejected because the plaintiff tried to use the most profitable portions of two different years to support its damage estimates. When the plaintiff's experience in the before period provides an inadequate foundation for inferences in the after period, the damage estimates are apt to be rejected as speculative.

Second, a related problem arises when the plaintiff's actual experience in the after period is influenced by causal factors other than the unlawful conduct of the defendant. In general, the subsequent performance of the plaintiff can be caused by its own failings (i.e., managerial mishaps), the lawful behavior of the defendant, and changed market conditions. The plaintiff must control for these other causal factors in its damage calculations. Suppose, for example, that a firm held a market share of 20 percent in the base period and a 5 percent share during the damage period. It is inherently unreasonable to claim a loss in market share of 15 percent due to some action of the defendant if there has also been substantial entry into the plaintiff's industry. What is necessary is an estimate of the effect of the unlawful conduct net of the impact of entry. Failing to control for the effect of entry leads to speculative damage estimates.

392f. Yardstick models and evidentiary problems. 1. *Generally.* The major difficulty encountered in the use of a yardstick is finding one. The central idea behind the yardstick approach is to find a firm that is comparable in all important respects to the plaintiff. The economic performance of the yardstick firm is then used as an estimate of the performance that the plaintiff would have experienced "but for" the antitrust violation. The ideal yardstick is a clone or an identical twin of the plaintiff. Short of this, one must identify a firm that is truly comparable in order for the inferences drawn to be reliable rather than speculative. One may describe the yardstick method as follows: "Under the yardstick approach the plaintiff attempts to identify a firm

22. *Joseph E. Seagram & Sons v. Hawaiian Oke & Liquors*, 416 F.2d 71 (9th Cir. 1969), *cert. denied*, 396 U.S. 1062 (1970).

23. *R.S.E. v. Pennsy Supply, Inc.*, 523 F. Supp. 954, 966–68 (M.D. Pa. 1981).

¶392   The Antitrust System of Remedies

similar to the plaintiff in all respects 'but for' the impact of the antitrust violation."[24] But the yardstick approach is demanding:

> . . . if the markets of the two firms are identical, and if the plaintiff's firm and the firm used for comparison stand in the same relative position in those markets, offer the same product mix, have comparable managements and are comparable in all other respects, then the fact finder may infer that the two would have had comparable revenues or profits "but for" the violation.[25]

For the yardstick approach to be viable, it is essential that the plaintiff and the yardstick operate in the same product market but in distinct geographic markets. In both *Farmington Dowel*[26] and *Admiral Theatre*,[27] the court explained that it was inappropriate to use a firm in the plaintiff's geographic market as a yardstick. The economic reason is plain: the financial performance of the yardstick is apt to be enhanced by the injury to the plaintiff. As a result, the damage estimate will be biased upward if the yardstick is in the plaintiff's market.

392f2.   *Unestablished business.*   In a case where the plaintiff's fortunes were nipped in the bud by an antitrust violation, the plaintiff will have no real track record on which to rely for a before-and-after measure of damages. Absent prior history, the plaintiff will have to link its "experience in a hypothetical free market to the experience of a comparable firm in an actual free market."[28] That is, it must resort to a yardstick approach. Before doing so, however, the plaintiff must provide some evidence that it would have been a viable entrant but for the exclusionary practices. The plaintiff can shoulder that burden by demonstrating that it was prepared to enter. It should show evidence of adequate capitalization,

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24.   Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and Its Practice §16.5 (5th ed. 2015).

25.   *Id.* (emphasis in original). In *Farmington Dowel Products v. Forster Manufacturing Co.*, 421 F.2d 61 (1st Cir. 1970), the plaintiff's yardstick damage evidence was rejected because (1) the plaintiff sold a single product, whereas the yardstick's offerings were more diversified; (2) the plaintiff's sales organization paled in comparison to that of the yardstick; and (3) the yardstick was more amply capitalized than the plaintiff. The plaintiff and the purported yardstick were simply not sufficiently similar to support the inferred damages.

26.   *Farmington Dowel Prods. v. Forster Mfg. Co.*, 421 F.2d 61 (1st Cir. 1970).

27.   *Admiral Theatre Corp. v. Douglas Theatre Co.*, 437 F. Supp. 1268 (D. Neb. 1977).

28.   *Fishman v. Estate of Wirtz*, 807 F.2d 520, 551 (7th Cir. 1986). On the unestablished business and problems of proof, see Roger D. Blair & William H. Page, *The Role of Economics in Defining Antitrust Injury and Standing*, 17 Managerial & Decision Econ. 127 (1996). For problems of standing, see Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and Its Practice ch. 16 (5th ed. 2015).

384

background and experience, and some actual steps taken toward entry such as obtaining the necessary facilities and equipment.[29] For firms that have already entered, their claims may involve foreclosure from expanding into new markets. In that case, the evidentiary burden of proving preparedness is apt to be somewhat lighter. In *Heatransfer*,[30] for example, the Court articulated such a reduced burden:

> The Court does not believe that a going concern, which is the victim of an anticompetitive practice, must forgo damages for sales it would have made as a result of the natural expansion of its business simply because it was victimized early in its existence before its attempts to expand could ripen into evidence of preparedness and intent to increase its output.[31]

On the other hand, some potential plaintiffs will fail to clear the preparedness hurdle. For example, if a plaintiff has no experience in a new line of business, has taken no affirmative steps to enter, and has not demonstrated an ability to raise the capital that entry would require, its damage claim may be characterized as "pie in the sky."[32]

There is no doubt that the preparedness hurdle will prevent some legitimate plaintiffs from recovering. But it also precludes opportunists from filing antitrust damage claims when they actually had no prior intention of entering the market in question.[33]

Once the plaintiff has convinced the court that it was adequately prepared to enter the market, the hard part begins. The putative yardstick must be comparable to the plaintiff in all important respects: product(s) offered, structure of the firm, management, geographic market, and so on.[34] Some courts have specifically rejected the use of industry averages.[35] The rejection of industry averages is understandable because an industry average

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29. *Hecht v. Pro-Football*, 570 F.2d 982 (D.C. Cir. 1977), cert. denied, 436 U.S. 956 (1978).
30. *Heatransfer Corp. v. Volkswagenwerk, A.G.*, 553 F.2d 964 (5th Cir. 1977).
31. *Id. at* 986 n.29.
32. *Dual-Deck Video Cassette Recorder Antitrust Litig*, 11 F.3d 1460, 1464–66 (9th Cir. 1993).
33. Minimal efforts may not suffice even though they are not zero. For example, in *Amerinet v. Xerox Corp.*, 972 F.2d 1483, 1498 (8th Cir. 1992), the plaintiff had made two test sales of the product but had not demonstrated any prior experience in selling that or a similar product. Its damage estimates were rejected.
34. In *Home Placement Service v. Providence Journal Co.*, 819 F.2d 1199, 1206 (1st Cir. 1987), the Court required the plaintiff to prove "product, firm, and market comparability."
35. *William Inglis & Sons Baking Co. v. Continental Baking Co.*, 942 F.2d 1332 (9th Cir. 1991).

necessarily involves a potentially wide range of firm characteristics regarding location, product quality (both level and consistency), managerial acumen, service, marketing and promotion, financial stability, and the like. There is no way to determine how closely the plaintiff matches the average profile, and therefore one cannot be confident that the plaintiff would have performed as did the industry on average.

In *Home Placement*, the plaintiff alleged that its rental referral business was impaired by the local newspaper's refusal to carry its advertising. Since the plaintiff was part of a chain, it tried to use one of its other locations as a yardstick. The product — rental referral services — was the same at both locations. As for the comparability of the two geographic markets, the Court found that the yardstick market was not sufficiently comparable to the plaintiff's market in terms of population, number of rental units, and the vacancy rate.[36] In addition, the plaintiff failed to control for differences in unemployment, rental patterns, summer rentals, and colleges. It also failed to prove that the degree of competition was similar in the two markets. With respect to the similarity of the two firms, the plaintiff failed to prove that they were comparably organized and managed.[37]

There is no doubt that a plaintiff's use of the yardstick approach encounters major obstacles in practice, but there are circumstances in which the yardstick model can be usefully employed. For example, if the plaintiff is the victim of a local price conspiracy, it may compare the cartel prices to those in another market that is untainted by the conspiracy. To be sure, the proposed yardstick market must be reasonably comparable to the plaintiff's market.[38] This will require making adjustments for differences (if any) between the two markets in labor costs, transportation costs, taxes, and the like. For example, in *Greenhaw*,[39] the defendants were retail liquor dealers in Lubbock County, Texas, who were fixing prices. The plaintiff compared the conspiratorial prices in Lubbock to presumably competitive prices in Dallas. In order to use the Dallas prices as a competitive benchmark for inferring the "but for" prices in Lubbock, however, cost differences had

36.   819 F.2d at 1206 n.9.
37.   *Id.* at 1206.
38.   *See, e.g., Metrix Warehouse, Inc. v. Daimler-Benz Aktiengesellschaft*, 828 F.2d 1033, 1044 (4th Cir. 1987), *cert. denied*, 486 U.S. 1017 (1988).
39.   *Greenhaw v. Lubbock Cnty. Beverage Ass'n*, 721 F.2d 1019 (5th Cir. 1983), *reh'g denied*, 726 F.2d 752 (5th Cir. 1984).

386

to be recognized. The plaintiff's expert adjusted for cost differences between Dallas and Lubbock and estimated the overcharge that the cartel had imposed in Lubbock during the conspiracy period.

392g.   Disaggregation of antitrust damages.   Suppose that an antitrust defendant has engaged in multiple activities that have imposed some injury on the plaintiff. If some of the defendant's conduct is lawful while some is unlawful, the damage claim will have to be disaggregated.[40] The reason for this is clear: under the common law, a plaintiff may recover a damage award that will return it to the financial position it would have enjoyed but for the unlawful conduct. The antitrust law generally adheres to this common law rule. Consequently, any part of the plaintiff's loss that is due to the lawful business practices of the defendant should not be part of the damages award. In addition, some of the defendant's conduct may be unlawful but not anticompetitive.[41] The damages attributable to unlawful, albeit competitively neutral, conduct must be isolated because those damages would not flow from an antitrust violation and therefore should not be trebled.

The importance of disaggregation was a central issue in the recent *Comcast* decision.[42] In the Philadelphia market, Comcast and a rival cable operator had subscribers in adjacent areas. Comcast swapped a service area in another market for the subscribers in the adjacent area in Philadelphia. In this case, a class of cable television subscribers alleged that these swaps violated §§1 and 2 of the Sherman Act. Comcast was alleged to have created a monopoly or to have attempted to create a monopoly, reducing competitive pressure and increasing price.[43] The class offered four theories of antitrust injury and damages. First, the swapping placed Comcast in a position to withhold local sports programming from satellite competitors. Second, it reduced competition from adjacent cable companies, or "overbuilders" who might infiltrate Comcast's service area. Third, it reduced "benchmark" competition on which cable customers rely in comparing prices. Fourth, it increased

40.   On disaggregation of damages, see ¶338 (generally); ¶657b (monopolization cases). And see M. Sean Royall, *Disaggregation of Antitrust Damages*, 65 Antitrust L.J. 311 (1997).

41.   In *Brooke Group v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 225 (1993), the Supreme Court pointed out that "an act of pure malice by one business competitor against another does not, without more, state a claim under the federal antitrust laws." Such malice, however, may offend other statutes or common law rules.

42.   *Comcast Corp. v. Behrend*, 133 S. Ct. 1426, 1430 (2013).

43.   See ¶331 for more details on *Comcast*.

¶392   The Antitrust System of Remedies

Comcast's bargaining power over content providers.[44] The trial court rejected all of the theories except the overbuilder theory. Although the trial court and Third Circuit certified the class under Rule 23(b)(3), the Supreme Court rejected the damage estimates due to a failure to disaggregate. The expert's model provided an aggregated estimate of the antitrust damages attributable to all four theories offered by the class. The expert acknowledged that the model could not isolate damages derived from the overbuilder theory, that is, the model did not provide estimates on a disaggregated basis. Consequently, the damage estimate could not be adjusted for the removal of the three theories that the trial court rejected and therefore the jury would have no basis for awarding antitrust damages solely due to the overbuilder theory.

The disaggregation requirement is distinct from the requirement that the plaintiff's damage calculations must control for exogenous factors that also have an adverse impact on the plaintiff's economic condition. Unfortunately, some of the cases encourage this confusion. For example, in *ILC Peripherals*,[45] the court criticized Memorex's damage calculation because it did not control for the plaintiff's own mismanagement, a recessionary economy, competition from other rivals, and other things unrelated to any antitrust violation.[46] Similarly, in *Transamerica*,[47] the court criticized the damage proof because it would not permit the jury to separate the effects of causes other than the unlawful conduct of IBM.[48] In *Southern Pacific Communications*,[49] the court pointed out that the plaintiff's aggregated damage estimate did not filter out the effects of the plaintiff's own inefficiencies.[50] In these cases, the concerns expressed really deal with a more fundamental problem: speculation due to a failure to control for factors that are extraneous to the antitrust dispute. This is a failure to satisfactorily estimate the plaintiff's "but for" condition rather than a failure to disaggregate.

44. *Comcast*, *supra*, 133 S. Ct. at 1430–31.
45. *ILC Peripherals Leasing Corp. v. IBM Corp.*, 458 F. Supp. 423 (N.D. Cal. 1978), aff'd sub nom. *Memorex Corp. v. IBM Corp.*, 636 F.2d 1188 (9th Cir. 1980) (per curiam), cert. denied, 452 U.S. 972 (1981).
46. *Id.* at 435.
47. *Transamerica Computer Co. v. IBM Corp.*, 481 F. Supp. 965 (N.D. Cal. 1979), aff'd, 698 F.2d 1377 (9th Cir. 1983), cert. denied, 464 U.S. 955 (1983).
48. *Id.* at 1013.
49. *Southern Pac. Comm'ns Co. v. AT&T Co.*, 556 F. Supp. 825 (D.D.C. 1983).
50. *Id.* at 1090.

It is more useful to view the disaggregation requirement as flowing from the fact that the defendant engaged in multidimensional conduct that adversely affected the plaintiff's fortunes, but that some of that conduct was lawful. *MCI* provides an excellent example of the problem.[51] MCI alleged that AT&T had engaged in a variety of business practices and conduct that violated the Sherman Act. As required by the trial court's pre-trial schedule, MCI's damage expert filed his expert report well in advance of the trial. The damage estimate, which was not disaggregated, compared MCI's actual profit performance to what it would have been but for all of AT&T's conduct. Some of MCI's allegations were dismissed on a motion for summary judgment that generated the dismissed allegations. AT&T's underlying conduct may have hurt MCI, but the court ruled that these practices were not offensive under the Sherman Act. Furthermore, some of MCI's remaining allegations did not stand up on appeal. For example, MCI had alleged that AT&T had illegally refused to deal with MCI and that AT&T had engaged in predatory pricing. The jury found in favor of MCI on the unlawful refusal to deal, which was affirmed by the Seventh Circuit. The jury's verdict in favor of MCI on the predatory pricing claim, however, was overturned by the Seventh Circuit. MCI had presented an aggregated estimate of lost profits that was the difference between MCI's profits but for AT&T's conduct and MCI's actual profits during the damage period. Since AT&T's aggressive competitive pricing must have had a substantial — albeit legal — impact on MCI's actual profits, the aggregated damage estimate overstated MCI's antitrust damages. Because MCI had not disaggregated its damage claim, the court was unable to determine the loss suffered due to the unlawful conduct.

In *MCI*, the plaintiff would have recovered the estimated damages if it had prevailed on all of its claims. In other words, disaggregation is not necessary if all of the defendant's conduct is unlawful.[52] It would be risky not to disaggregate, however, because that creates an all-or-none situation with respect to recovering damages. The need to disaggregate obviously imposes a high standard of economic proof on the plaintiffs.[53] Plaintiffs that

51.   *MCI Comme'ns Corp. v. AT&T Co.*, 708 F.2d 1081 (7th Cir.), *cert. denied*, 464 U.S. 891 (1983).

52.   *Continental Ore Co. v. Union Carbide & Carbon Corp.*, 370 U.S. 690, 698-99 (1962); *MCI*, 708 F.2d at 1161.

53.   *See* Comment, *Segregation of Antitrust Damages: An Excessive Burden on Private Plaintiffs*, 72 Cal. L. Rev. 403 (1984).

¶392   The Antitrust System of Remedies

cannot meet that burden may simply be out of luck. Although this may not seem just, recall the *MCI* situation. Arguably, MCI suffered from an illegal refusal to deal for which it should have recovered. But the aggregated damages included recovery for the losses due to extremely competitive pricing by AT&T, which was highly beneficial to consumers. If antitrust policy permitted recovery for injuries resulting from efficiency and competition on the merits, incentives would be distorted.[54] This would clearly work to the detriment of society and reduce consumer welfare.

In most cases, there are multiple counts, which raises a related issue of disaggregation. If an aggregated damage estimate is provided, there is no way for the jury to associate a portion of the overall damage estimate with each count. If some counts were dismissed on summary judgment, there would be no way to eliminate the damages allegedly flowing from those counts from a global damage calculation. Even if the plaintiff were to prevail on the balance of the counts, the jury would be forced to speculate as to the damages attributable to those counts. A similar problem would arise if the jury were to find in the plaintiff's favor on some counts but not on others. Again, the jury would be unable to identify some portion of a global damage estimate that could be attributable to those counts on which the plaintiff prevailed. In most cases, some of the counts do not invoke the antitrust laws. Those counts may not yield treble damages whereas the antitrust counts do. Consequently, it is imperative to attribute damages to each count even if the plaintiff were to prevail on all counts.

¶393. Timing, Interest, Present Values

Damage computations are complicated by the fact that the injury and the corresponding damage award do not occur at a single instant in time. Damages may be incurred over a prolonged period; the litigation may be protracted; the appellate process may drag on; injuries may extend into the future. The damage computations are influenced to one extent or another by these facts. Consider a price-fixing cartel that begins imposing illegal overcharges long before it is detected. Even if the practices stop at the time of suit, there will be a lag between that time and a final judgment.

54.   See Herbert Hovenkamp, Federal Antitrust Policy: The Law of Competition and Its Practice §16.5c (5th ed. 2015).

390

The appeals process will add to the delay. Things are even worse in a foreclosure case. There may well be future damages in addition to past damages. These timing issues raise questions about interest and present values.

393a.   Pre-judgment interest.   Suppose that an antitrust violation occurred in 2010 and a suit was filed in 2013. During the 2010–2013 period, damages were being incurred by the plaintiff. Assume further that the matter is resolved in the plaintiff's favor in 2014. Is the plaintiff entitled to recover pre-judgment interest for the 2010–2014 period on the sum awarded by the jury? The quick answer is usually "no."

Federal antitrust law has never permitted an award of pre-judgment interest.[1] Prior to 1980, the Clayton Act[2] was silent on the matter. This silence was interpreted as a prohibition by some courts. The Seventh Circuit, for example, observed that "[i]nterest is not enumerated as a recoverable item in the statute. . . . Recovery of it is therefore precluded."[3] Similarly, in *Hughes*,[4] the Second Circuit rejected the suggestion that pre-judgment interest could be awarded.

In 1980, Congress amended §4 of the Clayton Act to provide for pre-judgment interest in very limited circumstances. It is clear from the statute that the award is to be used to discourage opportunistic behavior designed to delay the proceedings. Courts can award pre-judgment interest on the actual (not trebled) damages only if the court finds that the defendant engaged in dilatory tactics.[5] It would appear that the purpose of this provision is to punish unreasonable delays rather than to provide additional

¶393,   n.1. Some states, however, permit pre-judgment interest for indirect purchaser claims.

2.   15 U.S.C. §15.

3.   *Locklin v. Day-Glo Color Corp.*, 429 F.2d 873, 877 (7th Cir. 1970), *cert. denied*, 400 U.S. 1020 (1971).

4.   *Trans World Airlines v. Hughes*, 449 F.2d 51 (2d Cir. 1971).

5.   In determining whether an award of pre-judgment interest would be just, the court may consider only

(1) whether such person or the opposing party, or either party's representative, made motions or asserted claims or defenses so lacking in merit as to show that such party or representative acted intentionally for delay, or otherwise acted in bad faith; (2) whether, in the course of the action involved, such person or the opposing party, or either party's representative, violated any applicable rule, statute, or court order providing for sanctions for dilatory behavior or otherwise providing for expeditious proceedings; and (3) whether such person or the opposing party, or either party's representative, engaged in conduct primarily for the purpose of delaying the litigation or increasing the cost thereof.

15 U.S.C. §15(a).

compensation to make the plaintiff whole. Arguably, the fact that the successful plaintiff's actual damages are trebled obviates any concern for making it whole. But this inference need not be correct if the litigation is sufficiently protracted.[6] For purposes of illustration, suppose that the appropriate interest rate is 8 percent and that the plaintiff had proved damages of $1,000, which it had suffered 20 years earlier. This award would automatically be trebled to $3,000. But this is not fully compensatory because it would be received 20 years after the injury. A compensatory award would take into account the forgone interest on the $1,000. In general, this is determined by using the compound interest formula:

$$A = (\$1,000) (1 + i)^t$$

where A is the award, i is the interest rate, and t is the number of years. In the present example of a $1,000 damage award and an 8 percent interest rate, a compensatory award would be

$$(\$1,000) (1.08)^{20} = \$4,661,$$

which is more than 50 percent greater than the trebled award of $3,000.

The prohibition of pre-judgment interest as a matter of course provides an incentive to disguise pre-judgment interest as something else. For example, the plaintiff may convert its past actual damages to current dollars. This conversion can be accomplished by using price indices.[7] If the circumstances of the case warrant it, the plaintiff may use the Producer Price Index (PPI) and convert its past damages into current dollars by dividing the PPI at the time of trial (PPI_t) by the PPI at the time of the injury (PPI_i) and then multiplying by the actual damage:

$$A = (PPI_t / PPI_i) D.$$

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6.   For example, the *Fortner* litigation went on for some 15 years. The *Fortner* litigants made three trips to the district court, three trips to the Circuit Court of Appeals, and two trips to the Supreme Court. The final decision in favor of the defendant was rendered in U.S. *Steel Corp. v. Fortner Enterprises*, 429 U.S. 610 (1977).

7.   Any appropriate price index can be used in this fashion. Which index is appropriate will be dictated by the facts of the case involved.

392

As an illustration, suppose that the plaintiff suffered an injury of $5,000 in 2003, when the PPI was 138.1 and the award was made in 2013, when the PPI was 203.4. Because of inflation, an award of $5,000 in 2013 dollars does not replace the $5,000 in 2003 dollars. The 2013 dollars simply are not worth as much as the 2003 dollars. As a result, the plaintiff would want to adjust the 2003 damage to 2013 dollars as follows:

$$(\$5{,}000)\,(128.3/105.3) = \$6{,}092.$$

While this may seem "fair," it is nonetheless equivalent to an award of pre-judgment interest equal to $2,364.

In two cases, plaintiffs have obtained pre-judgment interest by calling it "lost opportunity costs."[8] In *Multiflex*, for example, the court found "that the claims were made to reflect what the asserted lost profits would have earned in an open investment market, not as a statutory claim for pre-judgment interest."[9] But the amount that the lost profit would have earned is clearly equivalent to interest. The court seems to have been misled by the fact that the plaintiff made an economic argument rather than a transparent claim for statutory or common law pre-judgment interest. This would seem to be an error.

393b. Post-judgment interest. In our earlier hypothetical, the jury awarded damages in 2014; now suppose that the defendant appeals. If the appellate process were to take, say, two years, the next question is whether the plaintiff can recover post-judgment interest on the award. The quick answer is yes. Whereas pre-judgment interest — disguised or not — is the rare exception, post-judgment interest is awarded routinely. In fact, post-judgment interest is mandatory in civil actions generally and in civil antitrust cases in particular.[10] The interest runs from the date of the judgment until the judgment is paid.

Usually, the interest is *simple* rather than *compound*. The difference can be substantial because with compound interest the plaintiff receives interest on the interest. Suppose, for example, that there is an award of $10,000 that is ultimately paid five years after the judgment. Assuming that the interest rate is 10 percent, simple

8. *Multiflex v. Samuel Moore & Co.*, 709 F.2d 980, 996–97 (5th Cir. 1983), cert. denied, 465 U.S. 1100 (1964); *Heatransfer Corp. v. Volkswagenwerk, A.G.*, 553 F.2d 964, 986 & n.20 (5th Cir. 1977), cert. denied, 434 U.S. 1087 (1978).
9. *Multiflex*, 709 F.2d at 996–97.
10. 28 U.S.C. §1961.

¶393   The Antitrust System of Remedies

interest would amount to $1,000 per year for five years, or $5,000. In contrast, compound interest at 10 percent would amount to $6,105, which is 22 percent higher than the simple interest.[11]

393c. Valuing future profits.   Suppose that we have a situation where damages extend into the future. This, of course, raises questions of reasonably estimating these future profits.[12] But our focus here is not on whether the future lost profits have been estimated appropriately. For purposes of the discussion in this Subparagraph, we assume that the future profits have been estimated reasonably. Our present focus is on what that flow of future profits is worth at the time of trial, because the damage award will be a lump sum. As a result, one must calculate the present value of the stream of future profits, which will provide a lump sum that will replace the stream of future profits.

Present and Future Values.[13]   Although present value calculations can be complex in practice, the basic concept is straightforward, and the fundamentals are easily mastered. Consider a lender who can earn 10 percent interest annually on her loans.[14] If she lends $1.00, she will have $1.10 at the end of the first year:

$$(\$1.00)\,(1.10) = \$1.10.$$

At the end of two years, the lender would have $1.21 because her interest would compound — that is, she would earn 10 percent interest on her loan plus 10 percent interest on the interest earned in the first year:

$$(\$1.00)\,(1.10)\,(1.10) = (\$1.00)\,(1.10)^2 = \$1.21.$$

It is important to note that the lender does not receive just an additional $0.10 in interest in the second year. Instead, she receives $0.11. The extra penny results from earning 10 percent interest on the $0.10 interest earned in the first year.

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11. The compound interest is calculated as $(\$10,000)(1.10)^5 - \$10,000$, which is equal to $(\$10,000)(1.6105) - \$10,000$ or $\$16,105 - \$10,000 = \$6,105$. The process of compounding is explained clearly in Eugene F. Brigham & Joel F. Houston, Fundamentals of Financial Management 141–47 (8th ed. 1998).

12. See ¶391.

13. The principles of present and future values are examined more fully in Eugene F. Brigham & Joel F. Houston, Fundamentals of Financial Management 140–60 (8th ed. 1998).

14. In our examples, we assume that payments are received at the end of the year.

394

As a general proposition, the future value (FV) of $1.00 at an interest rate of i per year in n years can be written as

$$FV = \$1.00(1 + i)^n.$$

Once this is computed, the future value of any specific sum in n years can be found by multiplying the future value of $1.00 by that sum. For example, suppose that the interest rate is 8 percent and we want to know the value of $93.00 in 12 years. We know that the value of $1.00 in 12 years at an interest rate of 8 percent is

$$(\$1.00)(1.08)^{12} = \$2.52.$$

Consequently, the value of $93.00 at the end of 12 years will be

$$(\$93.00)(2.52) = \$234.36.$$

The converse of this proposition is that $1.00 to be received at some point in the future is worth less than $1.00 today since $1.00 today can be invested and over time will earn interest of, say, 10 percent until that point in the future. To determine how much less, we must answer the question, "What sum earning a 10 percent return will be worth $1.00 in a year?" The answer is found by solving a simple equation:

$$\$X\,(1.10) = \$1.00$$

$$\$X = \frac{\$1.00}{1.10}$$

$$\$X = 0.91.$$

Accordingly, $1.00 a year from now is worth only $0.91 today if the interest rate is 10 percent.

If the dollar is received at the end of two years, the calculation is a bit more complicated, but the principle is the same:

$$\$X(1.10)(1.10) = \$1.00$$

$$\$X = \frac{\$1.00}{(1.10)^2}$$

$$\$X = \$0.83.$$

1393   The Antitrust System of Remedies

That is, the present value of a dollar to be received two years from now is only 83 cents if the interest rate is 10 percent. This procedure generalizes quite nicely. The present value (PV) of $1.00 in n years discounted at i percent per year is

$$PV = \frac{\$1.00}{(1+i)^n}.$$

Now, we can see the relationship between present and future values:

$$PV = \frac{FV}{(1+i)^n}.$$

The present value equals the future value divided by the discount factor. This relationship allows us to calculate the present value of any sum to be received in the future at any interest rate. For example, suppose one were to receive $843.00 in seven years and the interest rate is 12.5 percent. The present value of that future sum would be

$$PV = \frac{\$843.00}{(1.125)^7}.$$

which is $369.62. In other words, if one were to start with $369.62 and invest it at 12.5 percent per year for seven years, the original investment would be worth $843.00 at the end of the seven-year period.

A stream of future profits can be discounted to present value by using these basic principles. The present value of a stream of future profits ($\Pi_1, \Pi_2, \ldots, \Pi_n$) is given by

$$PV(\Pi) = \frac{\Pi_1}{1+i} + \frac{\Pi_2}{(1+i)^2} + \ldots + \frac{\Pi_n}{(1+i)^n}.$$

Assume, for example, that lost future profits have been reasonably estimated as follows:

396

Year	Profit
1	$2,000
2	$6,000
3	$3,000
4	$8,000
5	$12,000

If the interest rate is 15 percent, then the present value of this stream of future profits is calculated as follows:

$$PV(\Pi) = \frac{\$2,000}{1.15} + \frac{\$6,000}{(1.15)^2} + \frac{\$3,000}{(1.15)^3} + \frac{\$8,000}{(1.15)^4} + \frac{\$12,000}{(1.15)^5}.$$

This amounts to $18,788.69.

Since the present value of a future sum is equal to that future value divided by the discount factor,

$$PV = \frac{FV}{(1+i)^t},$$

it is clear that the discount (or interest) rate will influence the present value. It is instructive, however, to examine some numerical examples to see just how much of an impact a change in the discount rate can have on the present value. Consider a future value of $10,000 and alternative discount rates of 10 percent, 12.5 percent, and 15 percent. At a 10 percent discount rate, the present value of $10,000 to be received in five years is

$$PV = \frac{\$10,000}{(1.10)^5} = \$6,209.$$

At a discount rate of 12.5 percent, the present value falls to

$$PV = \frac{\$10,000}{(1.125)^5} = \$5,549,$$

which is a decrease of 10.6 percent below the present value at a 10 percent discount rate. If we increase the discount rate to 15 percent, the present value falls further:

397

$$PV = \frac{\$10,000}{(1.15)^5} = \$4,972.$$

Thus, the present value of $10,000 is reduced by another $577 due to the increase in the discount rate from 12.5 percent to 15 percent.

393d.   Selecting a discount rate.   Since the present value calculations are so sensitive to the numerical value of the discount rate, serious attention must be paid to selecting the discount rate. It is useful to recall the purpose of discounting in order to understand what constitutes an appropriate discount rate. At the time of judgment, the plaintiff is to receive a lump-sum award that replaces the future stream of profits that have been lost due to the antitrust violation. The discount rate should reflect three factors: (1) the time value of money, (2) expected inflation, and (3) business risk.[15] These factors can be captured if one uses the weighted average cost of capital for the plaintiff as a discount rate. Such a rate is a market-determined rate that incorporates the economic realities of the plaintiff's business.

A business can finance its operations through some combination of debt and equity. There is an optimal combination of debt and equity that maximizes the value of the firm.[16] As a result, we usually assume that the firm's managers have employed that optimal combination. The proportions of debt (w_d) and equity (w_e) are calculated as

$$w_d = \frac{Debt}{Debt + Equity}$$

and

15.   PSKS, Inc. v. Leegin Creative Leather Products, Inc., 171 Fed. Appx. 464 (5th Cir 2006), rev'd on other grounds, 551 U.S. 877 (2007) ("[T]he plaintiff's expert apparently used a risk-free discount rate in calculating the present value of a ten-year stream of future profits It is clearly inappropriate to ignore business risk in the discounting"); see Franklin Fisher & Craig Romaine, Janis Joplin's Yearbook and the Theory of Damages, 5 J. Acct., Auditing & Fin. 145 (1990). The Fifth Circuit, however, found that the appropriate discount rate is a factual matter to be determined by the jury. As an economic matter, however, it is clearly wrong to ignore the business risk.

16.   The modern analysis of capital structure can be traced to Franco Modigliani & Merton Miller, The Cost of Capital, Corporation Finance, and the Theory of Investment, 48 Am. Econ. Rev. 261 (1958). The theory has been refined and extended considerably. For an excellent textbook treatment, see Eugene F. Brigham & Joel F. Houston, Fundamentals of Financial Management 444–76 (8th ed. 1998).

$$w_e = \frac{Equity}{Debt + Equity}.$$

To calculate the weighted average cost of capital, one uses the weights and the market values for the cost of debt (k_d) and the cost of equity (k_e):

$$WACC = w_d k_d + w_e k_e.$$

Now we turn to the component costs: k_d and k_e.

The cost of debt. The cost of debt (k_d) should reflect the fact that interest payments are a tax-deductible expense. Consequently, the cost of debt should be the after-tax cost, which is equal to the pre-tax rate of interest on new debt times one minus the tax rate applicable to the firm in question:

$$k_d = (\text{pre-tax interest } \pm \text{rate})(1 - T),$$

where T represents the tax rate.

The cost of equity. One way of estimating the cost of equity for a specific firm is to rely on the capital asset pricing model (CAPM).[17] In this model, the rate of return required by the stock market is a combination of a risk-free rate of return that could be earned on United States Treasury bonds[18] and a premium for bearing the business risks of holding that particular firm's stock. This relationship can be summarized as

$$k_e = k_{RF} + \beta(k_M - k_{RF}),$$

where k_{RF} is the risk-free rate of return, k_M is the rate of return one can earn by investing in the stock market generally, and β captures the correlation between the returns on a particular stock and the return on the market as a whole. The reason why β is multiplied by the difference between the market return and the risk-free rate

17. The capital asset pricing model (CAPM) can be traced to the fundamental insights of Harry Markowitz, *Portfolio Selection*, 7 J. Fin. 77 (1952); William F. Sharpe, *Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk*, 19 J. Fin. 425 (1964); Jan Mossin, *Equilibrium in a Capital Asset Market*, 34 Econometrica 768 (1966). The CAPM is now in standard textbooks; see Brigham & Houston, *Fundamentals of Financial Management*, *supra*, at 269-81.

18. These bonds have inflation risk, presumably reflected in their yield, but are free of any default risk.

¶393   The Antitrust System of Remedies

is that this difference is the risk premium that investors earn over the return that they can earn without bearing any risk at all. This average risk premium can be earned on a portfolio of all stocks available in the market. To the extent that the plaintiff's business is riskier than the average firm, β will be larger than one and the required rate of return (k_e) will be higher. In contrast, if the plaintiff's business is less risky than that of the average firm, then β will be less than one and the required return will be less.

Data for CAPM. To implement the CAPM, one needs data on its components: k_{RF}, k_M, and β. The first two are fairly accessible. The risk-free rate can be found in the *Wall Street Journal*, which reports the interest rates on United States government securities. The required return on the market as a whole can be approximated by the return on the Standard & Poors 500. This, of course, will vary over time, but an average over an extended period can be used to smooth out these fluctuations. The final component, β, is a bit more of a problem.

There are financial reporting services, such as *Value Line*, that track a large number of stocks. For the companies tracked, the value of β is readily available. But for many plaintiffs their β will be unavailable from reporting services such as *Value Line*, in which case, the plaintiff's β will have to be estimated. If the plaintiff's business is very much like that of a firm with a reported β, then that β can be used as a proxy. This procedure is fraught with problems because the comparability of the two firms will have to be established. Another way of estimating a firm's β is just to use the firm's actual returns and calculate the correlation between the firm's returns and the return on the market as a whole.[19] This estimation can be difficult for firms without a long earnings history and for closely held firms, where true measures of returns are confused because of internal decisions.

A numerical example. The following numerical example illustrates the calculation of the weighted average cost of capital. First, we must know the capital structure. Assume that the plaintiff's capital structure is 60 percent debt and 40 percent equity. Thus, in the WACC formula, $w_d = 0.6$ and $w_e = 0.4$. If the interest rate that the firm must pay on new debt is 15 percent and its tax rate is 40 percent, then the value of k_d is $(0.15)(1.0 - 0.4) = 0.09$. Suppose that the risk-free return is 6 percent, the market return is

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19.   Normally, one would do a simple regression analysis — a statistical methodology that will be examined in the next Paragraph.

400

12 percent, and that the firm's β is 0.8. Then the value for $k_{RF} =$ 0.06, $k_M = 0.12$, and $\beta = 0.8$. Now, the weighted average cost of capital is given by

$$WACC = w_d k_d + w_e k_e$$

or

$$WACC = w_d k_d + w_e (k_{RF} + \beta (k_M - k_{RF})).$$

Substituting the assumed values, we have

$WACC = (0.6)(0.09) + (0.4)(0.06 + (0.8)(0.12 - 0.06)) = 0.054 + 0.043 = 0.097.$

That is, the discount rate to be used in the present value calculations will be 9.7 percent.

¶394.   Econometrics and Statistical Inference

For our purposes, *statistics* refers to two distinct, albeit related, concepts. *Descriptive statistics* refers to the collection, organization, and presentation of numerical information (i.e., data). For example, a firm's past profits may be collected from its business records, organized by year, and presented in the form of tables, line graphs, or bar charts. These are the facts that must be presented to the jury in ways that are easy to understand. *Statistical inference* deals with scientific generalizations based on somewhat incomplete information. In other words, statistical inference uses a sample to make predictions about a more general population. Most of us are familiar with inferences drawn from sample data. A sample is a subset of a population, where the sample is usually drawn randomly from the population or selected based on some criteria. Samples are used not because we are interested in the specific observations included in the particular sample, but rather because we are interested in drawing conclusions about the population as a whole. For example, the outcome of an election is predicted in advance of a final tally based on a sample of voters. In this way, an inference is drawn using available, although incomplete, information.

Antitrust damage calculations require the determination of the economic circumstances that would have existed "but for" the antitrust violation.[1] In an overcharge case, one must compare the actual price to the price that would have prevailed but for the price fixing. In a lost profits case, the plaintiff's actual profits are compared to what they would have been but for the antitrust violation. In either case, this "but for" world does not actually exist because of the antitrust violation. We do not know what the price and output would have been in a particular market if the alleged antitrust violation did not occur. As a result, one must infer what would have been from known conditions. In the case of lost profits, for example, one typically will collect and analyze data on the plaintiff's past experience and various market variables. Inferences would then be drawn regarding the plaintiff's "but for" profits using past profit figures. Given sufficient data, very sophisticated statistical analyses are possible. Less sophisticated, albeit still reliable, analyses may be done if fewer data are available. Accommodation to practical limitations is often necessary in actual cases.

In this paragraph, attention will be directed to a statistical technique known as *regression analysis,* which is a staple of empirical research in economics.[2] The goal is not to provide a course in regression analysis; instead, the goal is to provide an understanding of what regression analysis is and how it can be useful in damage estimation. The potential weaknesses of regression analysis will be discussed as well.

394a. Basic steps in regression analysis. It is useful to organize the overview of regression analysis around a hypothetical. Suppose that the plaintiff has proven that it was foreclosed from a market and thereby suffered a loss in profit. The first step in estimating the lost profit is to estimate lost sales revenue. Regression analysis offers a mathematical method of identifying the factors that determine sales. In addition, it provides a way of

¶394.   n.1.   For an excellent survey of statistical analysis in antitrust litigation, see Jonathan B. Baker & Daniel L. Rubinfeld, *Empirical Methods in Antitrust Litigation: Review and Critique,* 1 Am. L. & Econ. Rev. 386 (1999).

2.   For a useful introduction to econometrics and regression analysis, see Jan Kmenta, Elements of Econometrics (2d ed. 1986), or G.S. Maddala, Introduction to Econometrics (2d ed. 1992). For a compact treatment of regression analysis, see Franklin M. Fisher, *Multiple Regression in Legal Proceedings,* 80 Colum. L. Rev. 702 (1980). *See also* Pierre Cremieux et al., *Proof of Common Impact in Antitrust Litigation: The Value of Regression Analysis,* 17 Geo. Mason L. Rev. 939 (2010), which contains useful summary of the law of the individual circuits as well as examples.

estimating the size of the impact that each factor has on sales. Iso-
lating and estimating the importance of the determinants of sales
makes it possible to predict what the plaintiff's sales would have
been "but for" the antitrust violation.

The first step in regression analysis is to build an economic
model. An economic model specifies a relationship between an
outcome measure (or the variable we are trying to explain) and
other factors that affect the outcome measure. Start by identifying
the most important economic and demographic factors that *theo-
retically* influence the outcome variable. The analyst relies on eco-
nomic theory to decide which variables should be included.[3]
Theory may predict, for example, that the population in the vicin-
ity of a restaurant will influence the restaurant's level of sales.
Theory may also predict whether this relationship is positive or
negative. For example, the population in the vicinity is apt to be
positively related to restaurant sales — that is, the larger the sur-
rounding population, the higher the sales level. Other theoreti-
cally important variables may be per capita income and relative
price. It is important to note that the economic specification of the
model proceeds on an entirely theoretical plane. While practical
problems of implementation relating to the availability or reliabil-
ity of data may require subsequent modification of the model,
those adjustments should be postponed. Thus, at this stage the
analyst should not worry about the availability of reliable popula-
tion data. If such data do not exist, the research effort may be futile,
but the variable's theoretical relevance cannot be ignored. In some
cases, the researcher may be able to use a proxy variable as an
approximation of the desired variable.

At this stage, the model is in a general, abstract form:

$$S = f(X_1, X_2, X_3). \tag{1}$$

That is, S is a function of X_1, X_2, and X_3. In this equation, S represents
sales revenue and is the *dependent* variable of interest; the
independent (or *explanatory*) variables are X_1, X_2, and X_3, which may
represent population, per capita income, and relative price,
respectively; and $f(.)$ denotes the unspecified functional (or

3. In particular, it is inappropriate to let the data dictate the specification of the model.
If this is done, the results will be *ad hoc* and may have no use in predicting sales or profits
in general.